AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently Amended) A method for improving flux compatibility of an underfill formulation in the presence of flux, flux residues and/or reaction products thereof, said method comprising adding an effective amount of one or more cationic catalyst(s) to said underfill formulation,

wherein said underfill formulation is a non-fluxing underfill formulation.

2. (Original) The method of claim 1 wherein the underfill formulation comprises one or more curable resins and the one or more cationic catalyst(s).

3. (Original) The method of claim 2 wherein the underfill formulation further comprises filler.

4. (Original) The method of claim 3 wherein the underfill formulation further comprises coreshell rubber.

5-9. (Cancelled)

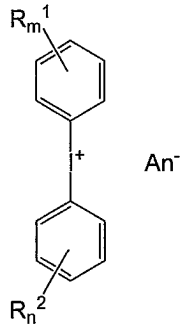
10. (Original) The method of claim 2 wherein the underfill formulation further comprises at least one curing agent.

11. (Original) The method of claim 1 wherein the cationic catalyst is an onium salt.

12. (Original) The method of claim 1 wherein the cationic catalyst is selected from the group consisting of a diaryliodonium salt, a triarylsulfonium salt, a diaryliodosonium salt, a triarylsulfoxonium salt, a dialkylphenacyl-sulfonium salt, a dialkyl(hydroxy dialkylphenyl)sulfonium salt, a phosphonium salt, a ferrocenium salt, and combinations of any two or more thereof.

13. (Original) The method of claim 1 wherein the cationic catalyst is a diaryliodonium salt or a triarylsulfonium salt.

14. (Original) The method of claim 1 wherein the cationic catalyst is a diaryliodonium salt having the formula:



wherein:

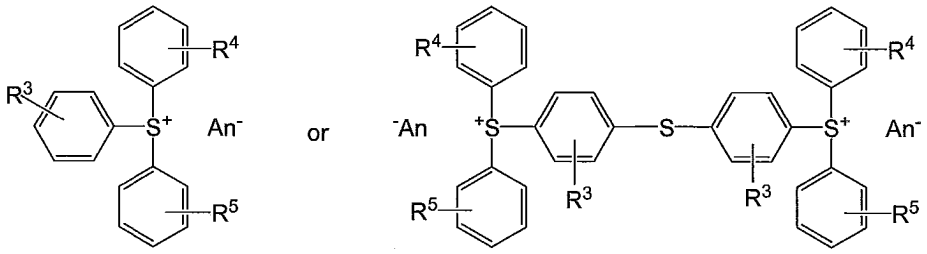
R^1 and R^2 are each independently selected from the group consisting of alkyl, alkoxy and halogen;

m and n are each independently 0-2; and

An^- is an anion.

15. (Original) The method of claim 14 wherein An^- is selected from the group consisting of hexafluoroarsenate (AsF_6), hexafluoroantimonate (SbF_6), hexafluorophosphate (PF_6), boron tetrafluoride (BF_4), trifluoromethane sulfonate (CF_3SO_3), tetrakis(pentafluorophenylborate), ($B[C_6F_5]_4$), tetrakis [3,5-bis(trifluoro-methyl)phenyl]borate ($B[C_6H_3(CF_3)_2]_4$), and combinations of any two or more thereof.

16. (Original) The method of claim 1 wherein the cationic catalyst is a triarylsulfonium salt having the formulae:



wherein:

R^3, R^4 and R^5 are each optionally present and are independently selected from the group consisting of alkyl, alkoxy, phenoxy, and phenylsulfide; and

An^- is an anion.

17. (Original) The method of claim 16 wherein An^- is selected from the group consisting of hexafluoroarsenate (AsF_6), hexafluoroantimonate (SbF_6), hexafluorophosphate (PF_6), boron tetrafluoride (BF_4), trifluoromethane sulfonate (CF_3SO_3), tetrakis(pentafluorophenylborate), ($B[C_6F_5]_4$), tetrakis [3,5-bis(trifluoro-methyl)phenyl]borate ($B[C_6H_3(CF_3)_2]_4$), and combinations of any two or more thereof.

18. (Original) The method of claim 1 wherein the cationic catalyst is selected from the group consisting of (4-octyloxy-phenyl)phenyliodonium hexafluoroantimonate, [4-(2-hydroxy-1-tetradecyloxy)phenyl]phenyliodonium hexafluoroantimonate, 4-(2-hydroxy-tetradecyloxyphenyl)phenyliodonium hexafluoroantimonate, and combinations of any two or more thereof.

19. (Original) The method of claim 18 wherein the cationic catalyst is 0.1-10 wt % of said underfill formulation.

20-21. (Cancelled)

22. (Original) The method of claim 1 wherein the curable resin is selected from the group consisting of epoxy resins, phenol resins, maleimide resins, itaconamide resins, nadimide resins, (meth)acrylate resins, polyamide resins, polyimide resins, cyanate ester resins, and combinations of any two or more thereof.

23. (Currently Amended) The method of ~~claim 3~~ claim 4 wherein the coreshell rubber is selected from the group consisting of butadiene-acrylonitrile-styrene coreshell rubber (ABS), methyl methacrylate-butadiene-styrene coreshell rubber (MBS), methyl methacrylate-butyl acrylate-styrene coreshell rubber (MAS), octyl acrylate-butadiene-styrene coreshell rubber (MABS), alkyl acrylate-butadiene-acrylonitrile-styrene coreshell rubber (AABS), butadiene-styrene coreshell rubber (SBR), methyl methacrylate-butyl acrylate-siloxane coreshell rubber, and combinations of any two or more thereof.

24-27. (Cancelled)

28. (Currently Amended) In a method for improving flux compatibility of underfill formulations in the presence of flux, flux residues and/or reaction products thereof, the improvement comprising adding an effective amount of one or more cationic catalyst(s) to the underfill formulation,

wherein the underfill formulation is a non-fluxing underfill formulation.

29. (Currently Amended) A method for improving HAST performance of an underfill formulation in the presence of flux, flux residues and/or reaction products thereof, the method comprising adding an amount of one or more cationic catalyst(s) to the underfill formulation effective to improve the HAST performance thereof,

wherein the underfill formulation is a non-fluxing underfill formulation.

30-33. (Cancelled)

34. (Currently Amended) A method for adhesively attaching an electronic component to a circuit board in the presence of flux, flux residues and/or reaction products thereof, the method comprising curing a composition comprising one or more curable resins and one or more cationic catalyst(s) after application of the composition between the component and the board,

wherein said composition is a non-fluxing underfill composition.

35. (Cancelled)

36. (Currently Amended) An article comprising an electronic component adhesively attached to a circuit board in the presence of flux, flux residues and/or reaction products thereof, wherein the electronic component is adhesively attached to the board by a cured aliquot of a composition comprising one or more curable resins and one or more cationic catalyst(s),

wherein said composition is a non-fluxing underfill composition.

37. (New) The method of claim 1 wherein said underfill formulation is a capillary flow underfill formulation.

38. (New) The method of claim 28 wherein said underfill formulation is a capillary flow underfill formulation.

39. (New) The method of claim 29 wherein said underfill formulation is a capillary flow underfill formulation.

40. (New) The method of claim 34 wherein said underfill composition is a capillary flow underfill composition.

41. (New) The method of claim 36 wherein said underfill composition is a capillary flow underfill composition.